Digital-Flexo-Cut

User Manual

English

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1 Safety Precautions

1. **Please read this instruction and the Wink ABC (cylinder) carefully and completely before operating the machine. Attention, deviating from the ABC, the DFC has a gap clearance of 0.8 mm.**

2. Please make sure the mains voltage is suitable and the outlet has a proper earth connection.

3. Use an exclusive outlet, as overloading may cause fire or an electric shock.

4. Do not unplug the plug or unplug the power cord from the outlet with a wet hand , this can cause an electric shock or injury.

5. Repairs have to be carried out by trained Nagel technicians only.

6. Disconnect the machine from the mains while servicing it.

7. Use original Nagel consumables and spare parts only.

8. Lay the cables in a way that no dangers arise.

9. Install the machine in a dry room on levelled and solid ground. And within easy reach.

10. Block the breaks after putting the machines in place.

11. Safety precautions like covers or switches must not be removed or bypassed.

12. Always replace fuses with the same type and rating.

13. Users with long hair need to keep safe distance to turning parts.

14. Close lids that they don't fall.

15. Don't open lid during operation this could cause paper jams.

16. Connect the machines with the provided screws. It is not allowed that they can be disconnected w/o tools.

17. Allow at least 20 seconds to pass between attempts to switch on the unit, otherwise the software may be damaged.

18. When changing plug connections, always switch off the machines!

19. Work careful at the leaf springs. They consist of thin sheet metal and could cause injury through incautious contact.

20. Do not place receptacles containing liquids on any surface.

21. Do not under any circumstances adjust the paper gate, or other parts when the machine is switched on.

Attention! Important for startup:

If the DFC is connected to left turning three phase current, the pump will generate an uncomfortable noise. This condition is harmful to the pump. Therefore power off the machine immediately and swap two of the three phases.

Attention! Important for operation:

Please do not over tighten the tensioning bolts, which apply the cutting pressure. This will shorten the lifetime of the plain rollers, see WINK „The ABC of cutting tools".

2 Proper Use

Proper use consists in die-cutting, kiss-cutting and perforating paper, cardboard, labels and foils. The maximum thickness must be observed – it is determined by the gap between the cylinders and by the plate thickness.

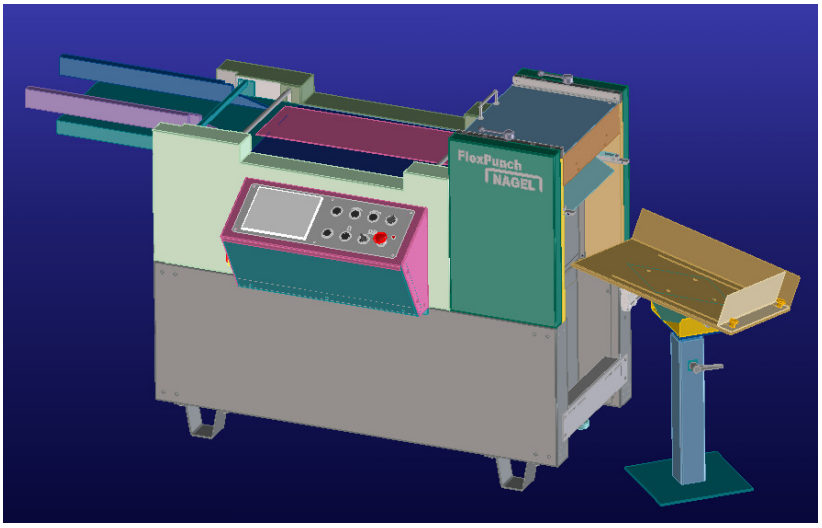
3 Description and Specifications

Production speed: Up to 2000 cutting strokes /h
Maximum format: 500 mm x 350 mm (L x W)
Minimum format: 90 mm x 160 mm (L x W)

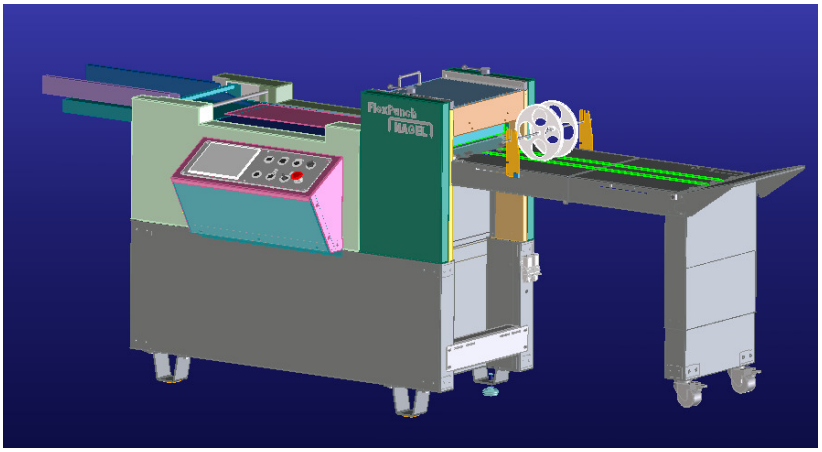
Cutting cylinder perimeter: 20 inches (508 mm)
Cutting plate thickness: max. 0.80 mm (for die-cutting), this equals the gap clearance between the cylinders

Power connection: 3 x 400 volts / 16 A

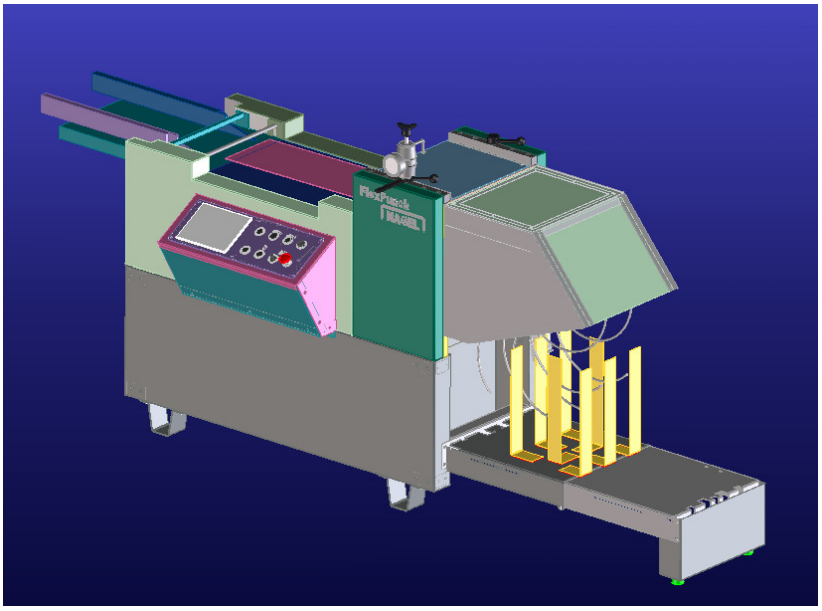
4 Accessories



Outlay table (3955070) – a cost-efficient alternative to complex outlay systems



Convey (3955061)

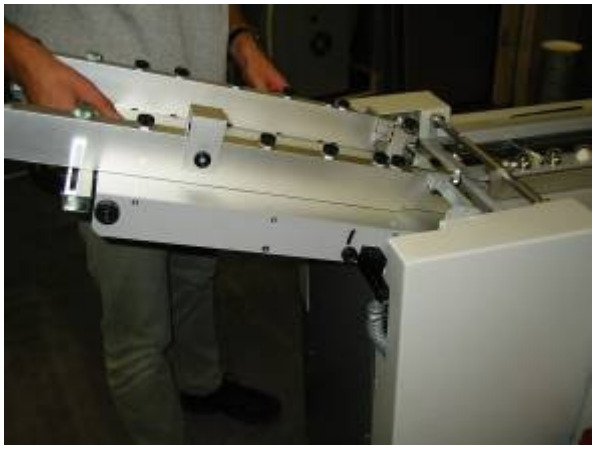


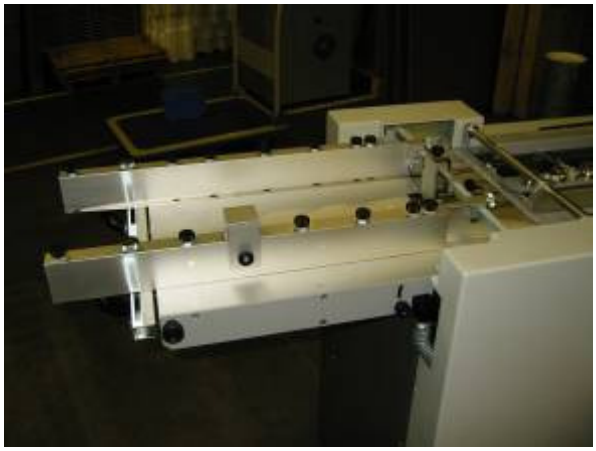
Fan wheel (3955066)

Installation of the Optional “fan wheel 3955066“

Fasten plate 3955048 for the cover to the front plate of the DFC using 2 DIN 912 M6x12 screws.

Remove two screws (see above) and use them to mount the delivery wheel in holes 3 and 5.
Connect the power cable for the motor and the encoder.
Fit the table assembly 3955036 at the cross bar.
Fit the cover TBD assembly at the DFC.





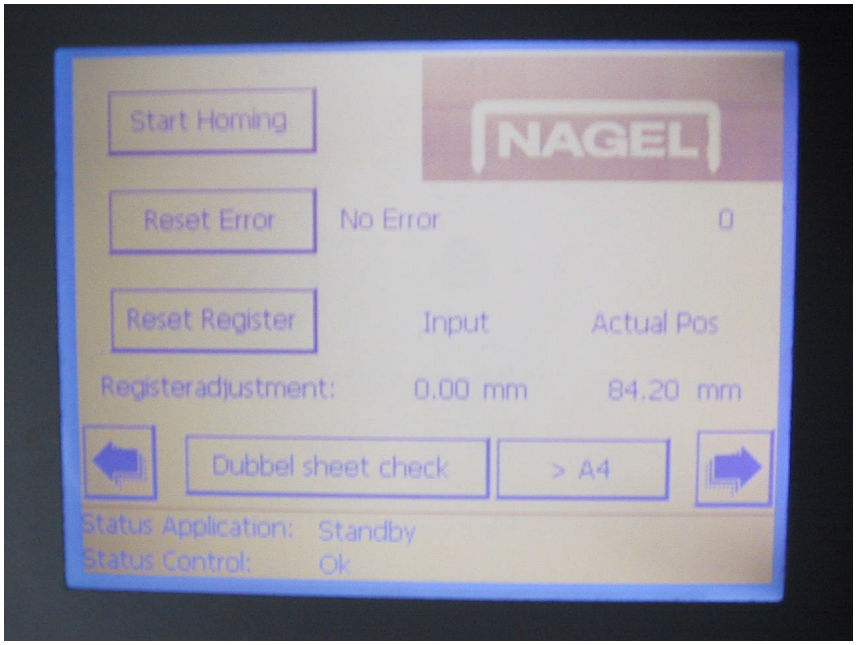
Fit the feeder as shown.

The stripping angles 3955065 are fastened to the table with the glued-on magnetic plates.

5 Start-Up:

Turn on the machine at the main switch, to the left of the control panel. The “emergency stop button” must not be actuated at this time. You will see the main menu.

Main menu



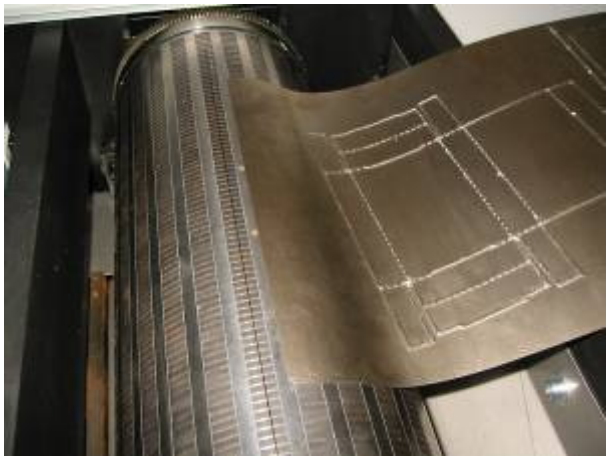
Press the button “Start Homing”. The magnetic cutting cylinder moves to its reference position (zero position) – you will see a check mark once the process has been successfully completed. **Important : In case of using paper size bigger than A4, the “>A4” – button must be activated, otherwise the paper won’t be ejected completely !**

6 Controls:

Upper controls, from left to right:
“Start” button, “Rotation left” button, “Rotation right” button, rotary switch “Setup or Production”

Lower controls, from left to right:
“Stop” button, “Single sheet feed” button, rotary switch “Continuous feed on/off”, “Emergency stop”

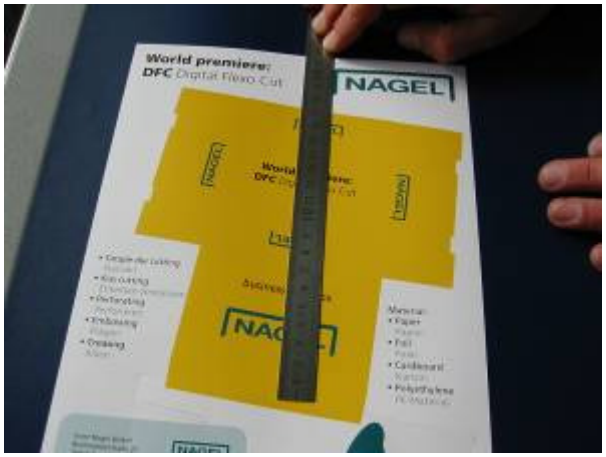
7 Mounting a New Cutting Plate:



Rotary switch “Setup or Production” on the upper right to Jog.
Use the “Rotation left” or “Rotation right” button to adjust the magnetic cylinder until both stop pins are at the top. Place the cutting plate onto the middle of the cylinder; pay attention to the marking in the centre of the plate.
Draw in the plate with the “Rotation left” button.

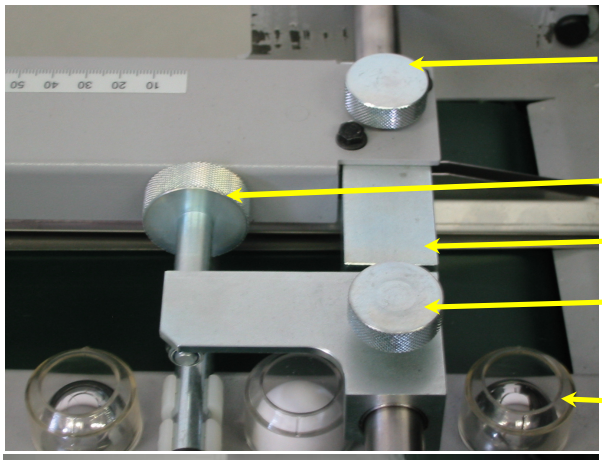
Set the rotary switch “Setup or Production” on the upper right back to “Reg”. The DFC cutter moves back to reference position.
Adjust the lateral stops of the feeder so that the sheet to be fed is centred.
Adjust the lateral stop of the oblique belt.
Set the rotary switch “Continuous feed on/off” on the lower right to zero.
Press the “Start” button on the upper left.
The blower is started and the belts are set in motion.
Adjust the blast air so that the sheets in the stack are well separated.
Press the button “Single sheet feed” to feed a sheet into the machine.
Press the “Stop” button on the lower left.

8 Register Adjustment in Longitudinal Direction:



Measure the offset in longitudinal direction with a ruler. Press the “Enter” button on the display, to the right of the “Reset Register” button. You will see an input box in which you can enter the measured value. Repeat these steps, if necessary.
Should the cutting-contour be moved into the opposite direction of the direction of transport, a negativ value must be entered.

9 Correcting the Lateral Offset:



Names of the items:

Locking screw of the lateral guide (LL)

Micro adjusting screw of the lateral guiding (ML)

Guiding block

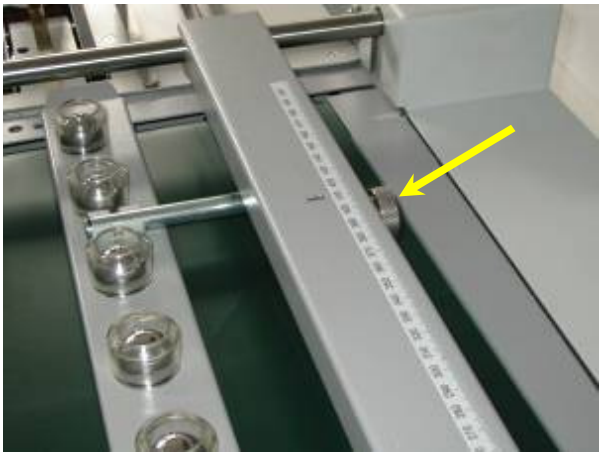
Locking screw for fine adjustment (LF)

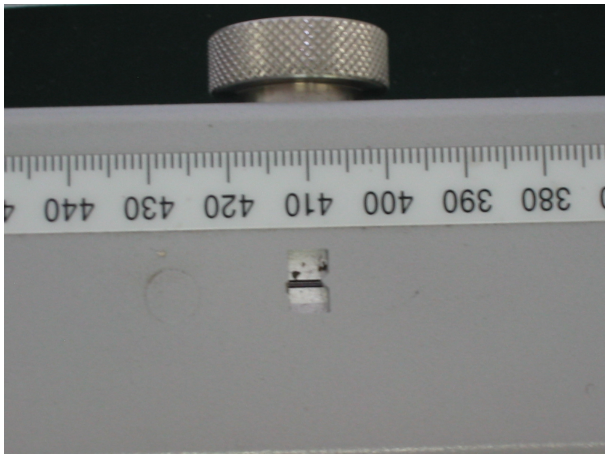
Ball cage out of plastic material

To correct a larger deviation, loosen LF and LL, then move the lateral guiding along the guiding block to your desired position. Fasten LL again.

For fine adjustment fasten LF, loosen LL and use ML to move the lateral guiding in the desired direction. Fasten LL again.

10 Correcting the Angular Offset:





An angular deviation can be corrected by the thumb wheel as shown in the pictures above. Please notice that the paper stop is always orthogonal to these cylinders. If very thin and flexible paper is used, rather the cutting plate should be repositioned.

Attention:
Inprecisions in this place can also result from the used balls and their weight.
Here are two examples following:

Light papers, heavy balls
By using too heavy balls for light papers, the paper sheet might be pulled with too much force against the lateral guiding and a bulge appears between the balls and the lateral guiding. If the distance between the ball bar and the lateral guiding ist too big, a similar effect apears.

Heavy papers, light balls
By using too light balls for heavy papers, it might happen, that the paper sheet isn't pulled to the lateral guiding. In this case the paper sheet isn't aligned properly and runs random between the rotation cylinders.

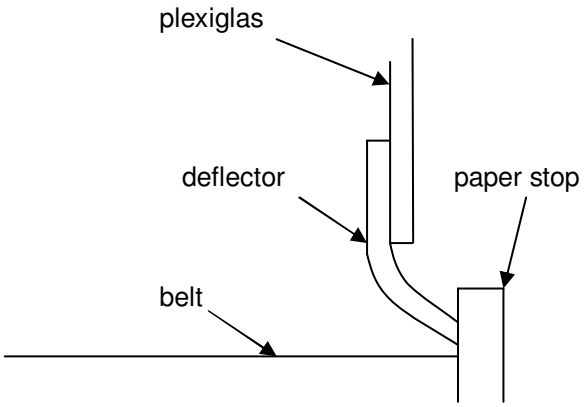
Production:

Turn rotary switch "JOG/ REG" to REG
Now the cylinder turns to the home position (a check mark behind the array "Start Homing" should appear)
Otherwise touch the array "Start Homing", so that the cylinder turns into home position.
Turn rotary switch "continious feed" to the right.
Push "Start".

11 Possible Sources of Failures:

Cutting-/Creasing-/Perforating- Contour jumps:
Belt-speed too fast, residence time ("Timer Stopper") to short, balls too light.
By using thin waved material (e.g. because of humidity) it may happen that the leading edge goes up the paper stop. In this case the material can be processed anyway, if a simple deflector (e.g. a stripe out of paperboard) is beeing attached.
Paper jam:
The sheet stays stuck in the cutting-/ creasing-/ perforating- contour and is beeing deflected upwards, instead of beeing moved out straight. Stripes or plates out of natural rubber (3955081) should be attached along the cutting-/ creasing-/ perforating- contour. The elastic material pushs the paper sheet away from the cutting plate on the cylinder and enables an uncomplicated transport.

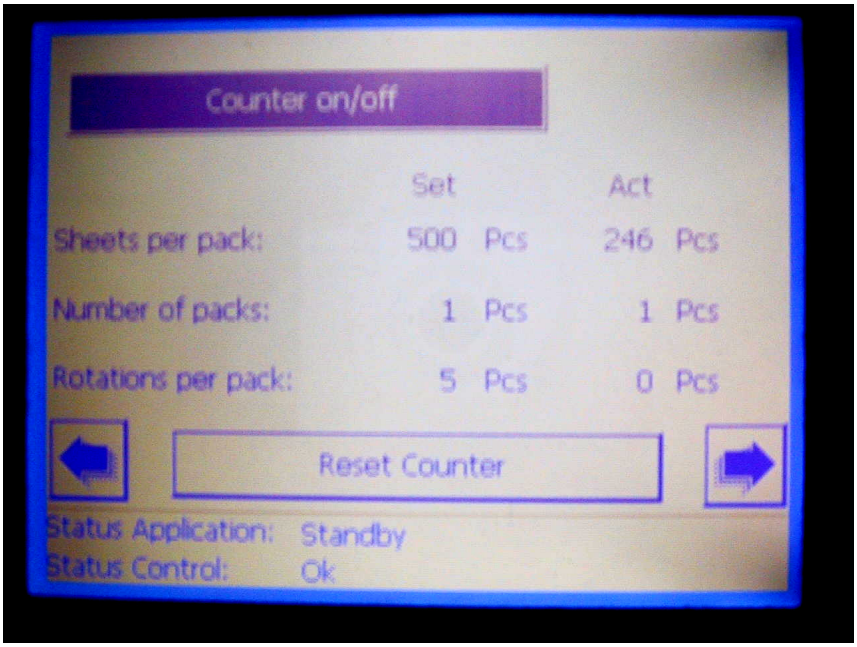
Cutting-/Creasing-/Perforating- Contour is in delay:
The paper sheet "swims" in the gap between the cylinders. By attaching a stripe out of natural rubber (3955081) at the perimeter of one of the two cylinders the sheet will be transported in a secure way, see picture below.



12 Further Options of Adjustment on the Display:

You can navigate to the next screen, or to the previous screen, by means of the “Arrow right” and “Arrow left” buttons of the touch panel.

12.1 Basic Settings



"Counter on/off"
The continuous feeding mode will not work while the counter is deactivated.

"Sheets per Pack":

"Number of Packs":

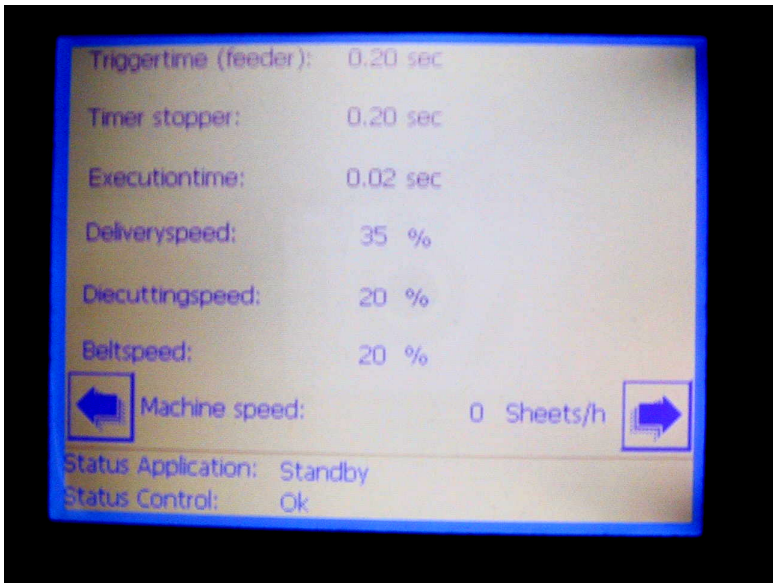
"Rotations per Pack":

"Reset Counter":
Resets the counter to zero

Arrow left:
Takes the operator back to the main menu

Arrow right:
Takes the operator to fine tuning menu

12.2 Fine Tuning



"Triggertime":
Configures the time span of the opening of the vacuum valve at the suction drum of the feeder. If this time span ist too short, the paper sheets will stay lying in the feeder. For working with big sheets the time span should be a bit longer. If there is an appearance of doubled sheets, the time span should be chosen shorter.

"Timer Stopper" (paper stop):
Waiting period during recognition of the front-edge of the sheet and the sinking of the paper stop (see also p.8, Chapter 10). If the period is adjusted too short, the sheet might vibrate or doesn't lie properly at the paper stop by the time. On the other hand the sheet might be damaged by the bevel belt if the chosen period is too long.

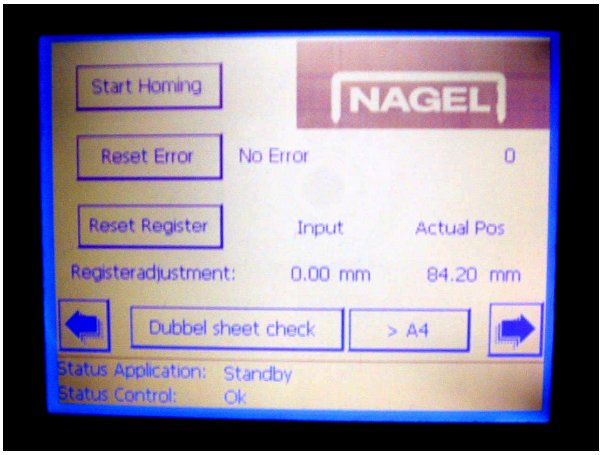
"Executiontime":
Runtime of the optional convey (3955061).

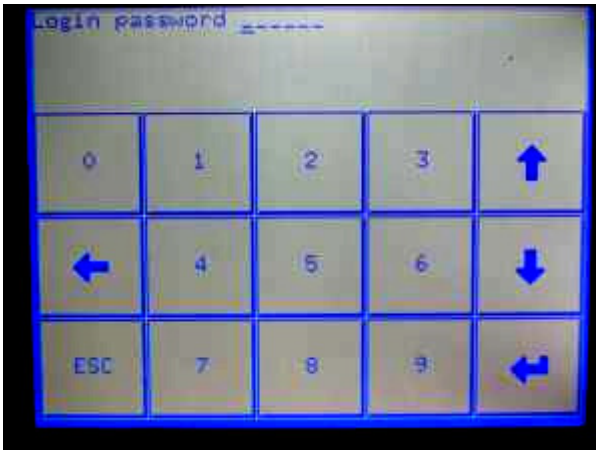
"Deliveryspeed":
Time period of 1/8 Turn of the optional delivery wheel in % of the maximum speed.

"Diecuttingspeed":
Speed of the cutting cylinder. It might be adjusted to a fast speed.

"Beltspeed":
Speed of feeder and bevel belt. It might be increased if using heavy stock.

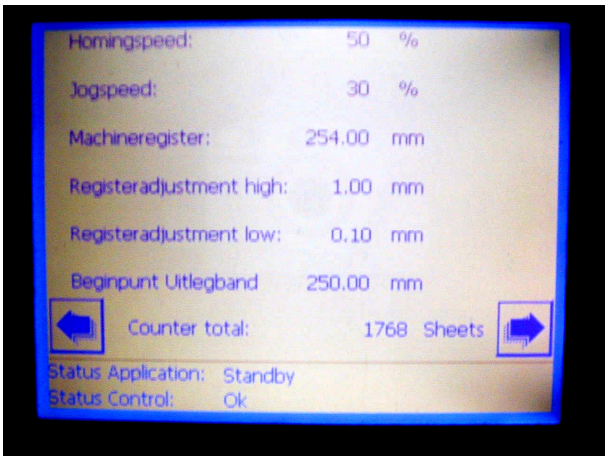
13 Service Mode:





To go to service mode, touch the “Nagel” symbol on the main menu. Then enter the password 4711. Press Enter to return to the main menu. Then press “Nagel” again to go to the first service menu.

13.1 First Service Menu:



"Homingspeed":
Rotation speed of the cylinder during going into home position

"Jogspeed":
Rotation speed when turning the cylinder by buttons in "JOG"-mode

"Machineregister":
254 = half of the cylinders perimeter (don’t change)

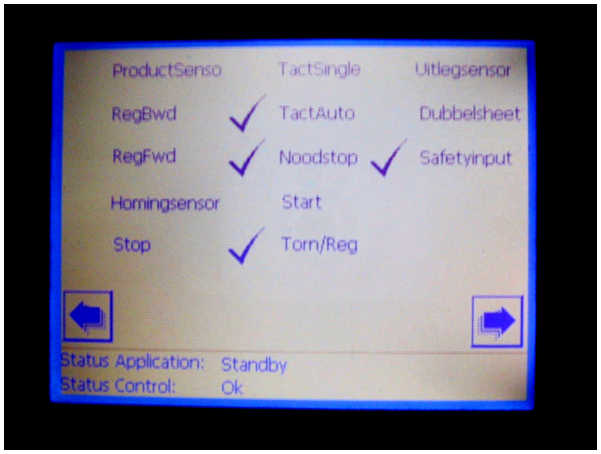
"Registeradjustment high":
The value the register is altered by pushing the buttons for more than a second (during production).

"Registeradjustment low" (fine):
like "Registeradjustment high", accept the value is 0.1 mm

"Beginpunt Uitlegeband":
The distance the cutting cylinder turns in mm until the convey (3955061) begins to run

"Counter total":
Read only.
<u>Important:</u> Before the software is getting an update the value has to be written down, because after the update the value will be zero again !

13.2 Second Service Menu:



Here the several sensors and the buttons of the user panel can be checked. An active sensor/ button causes a check mark on the display as shown above.

ProductSenso:
The reflex lightbar which detects the front-edge of the sheet before reaching the paper stop

TactSingle:
Single sheet – button

Uitlegsensor:
Sensor of the (optional) delivery wheel 3955066

RegBwd:
"Rotate right" – button

TactAuto:
continious feed switch

Dubbelsheet:
Doublesheet – sensor (not implemented)

RegFwd:
"Rotate left" – button

Noodstop:
"Emergency Stop" – button

Safetyinput:
(not implemented)

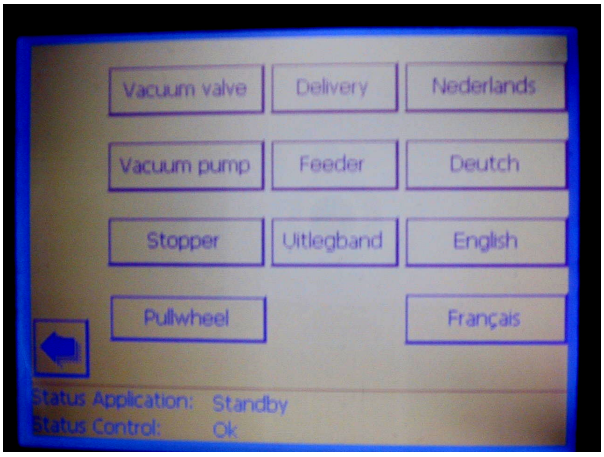
Homingsensor:
Sensor Home position of the cutting cylinder

Start:
"Start" – button

Stop:
"Stop" – button

Torn/Reg (Jog/Reg)
"Setup or produce" – turning switch

13.3 Third Service Menu:



In this menu, you can enter settings for various machine components and choose the display language.

Vacuumvalve:
230 Volt at valve (attached to pump)

Delivery:
230 Volt AC at extern jack for optional delivery wheel 3955066

Vacuumpump:
230 Volt at pump

Feeder:
230 Volt at motor of feeder

Paper stop:
230 Volt at solenoid of the paper stop

Uitlegeband:
24 Volt DC at extern Jack for convey (3955061).

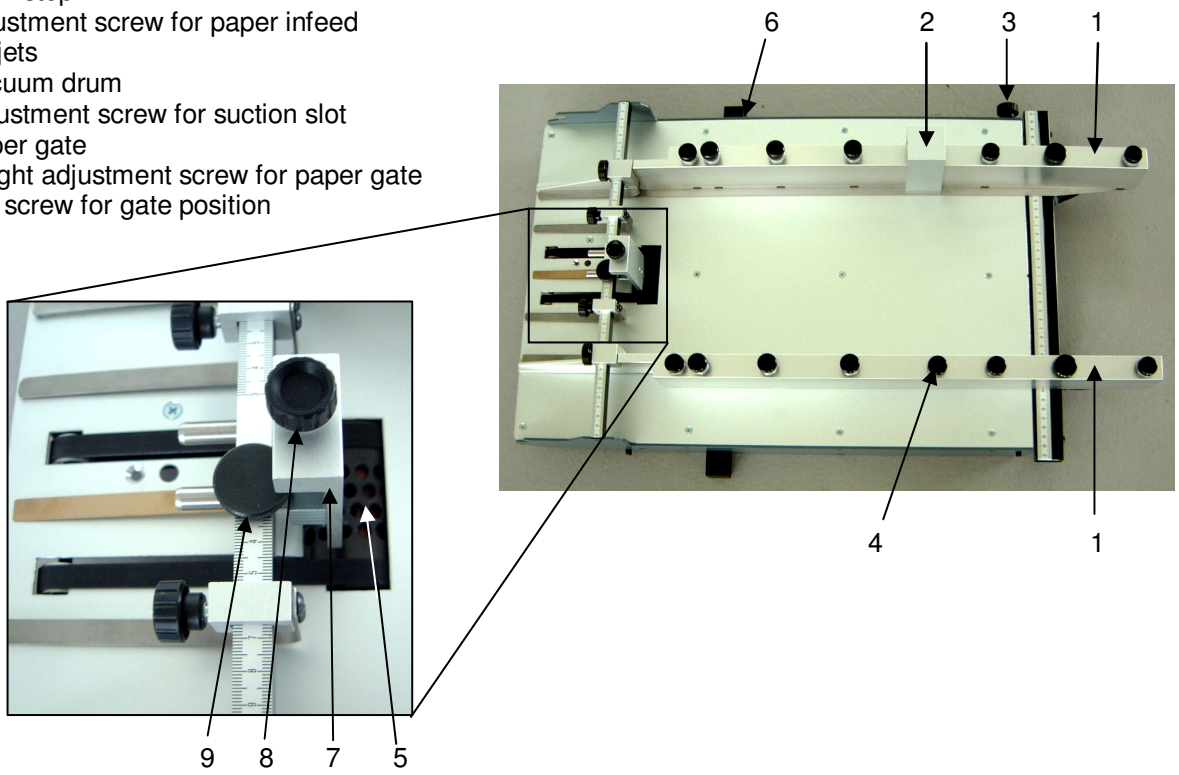
14 Operating Instructions Feeder

14.1 Safety Instructions

For safety reasons, always first unplug the main plug before undertaking any repair or maintenance work.

14.2 Description

1 Paper guides L and R
2 Back stop
3 adjustment screw for paper infeed
4 Air jets
5 Vacuum drum
6 Adjustment screw for suction slot
7 Paper gate
8 Height adjustment screw for paper gate
9 Set screw for gate position



14.3 Installation

By hooking the feeder to the catching bolts, the necessary connection to the drive is accomplished.

15 Feeder Adjustments

15.1 Paper Size Adjustment

After the lateral paper guides (1) have been adjusted to the size of the paper being processed, the back stop (2) has to be placed at the end of the paper pile. This avoids the paper moving backwards because of the air blow. To achieve a maximum sheet separation, all air jets (4) outside the paper stack have to be closed (thus ensuring optimal air pressure under the stack).

15.2 Infeed Angle

The paper infeed angle to the folding rollers can be adjusted by the adjustment screw (3).

15.3 Suction Drum and Paper Gate

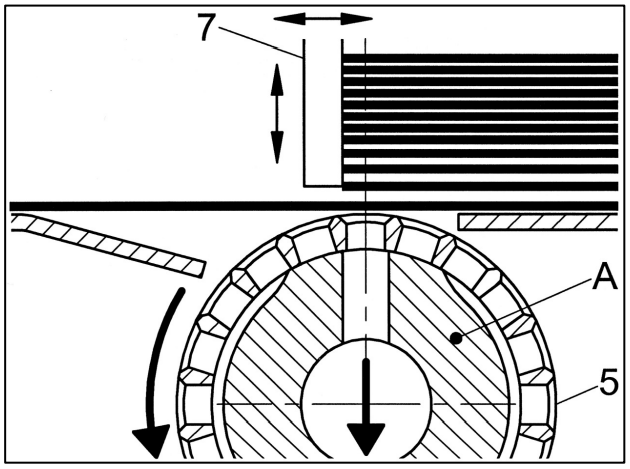
Gate (7) must be positioned as shown in illustrations 1 and 2, depending upon the thickness of the paper being processed. The ideal position can be determined by trial and error:

- Picture 1 for thicker papers
- Picture 2 for thinner papers

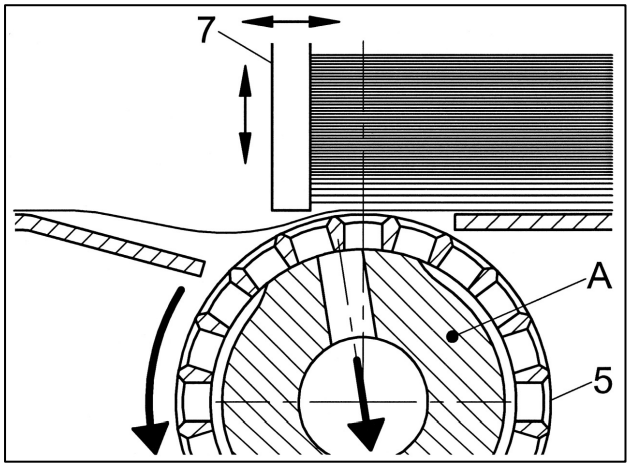
This procedure might require 2-3 trials until the best gate (7) position is found. There is no basic rule because every paper feeds differently.

The suction slot (A) must always be adjusted to the position of the gate (7) by adjustment screw (6). After positioning, the gate (7) has to be set to leave a gap of approx. 2 sheets to the suction drum with the adjustment screw (8).

The position of the suction slot (A) can be adjusted on the run with adjustment screw (6).



Picture 1



Picture 2

15.4 Compressed Air and Vacuum

On most vacuum pumps the volume of air can be adjusted by means of valves provided for this purpose. If less vacuum is required for very light papers, a reduction can be achieved by adjusting the air supply on the pump directly.

Normally the air supply on the vacuum pump is set to the maximum.

16 Technical Specifications of the Feeder

Minimum size	90 x 120 mm (standard)
Maximum size	235.201 (A3): 350 x 500 mm (standard) 245.201 (A2): 450 x 650 mm (standard)
Drive	Friction by the drive shaft of the folding machine
Dimensions	235.201 (A3): 387 x 700 mm 245.201 **(A2)**: 487 x 700 mm
Weight	235.201 (A3): 9.7 kg 245.201 (A2): 14 kg

17 Trouble Shooting

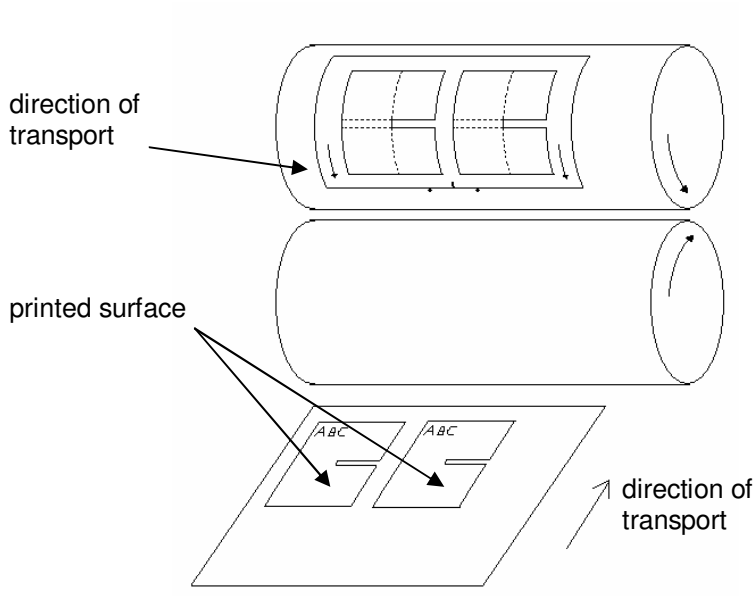
Problem	Cause	Remedy
Paper is not being fed.	○ Not enough air supply under the paper pile. ○ Position of vacuum drum (5) and paper gate (7) has not been adjusted precisely to the paper. ○ Paper pile is too heavy.	○ Open air jets (4) or close air jets outside of the paper pile. ○ Search for the position of the vacuum drum (5) to the paper gate (7) (refer to point 15.3.). Use screw (9). ○ Reduce the paper pile, put less paper into the feeder.
Paper piles up after the paper gate, before entering the folding rollers.	○ Side guides (1) have been adjusted too narrow or are not parallel.	○ Readjust the side guides (1).
Double sheets	○ Paper gate (7) has not been adjusted correctly.	○ Adjust the paper gate (7) to 2 sheets of paper (refer to point 15.3.).
Front edge of sheets are being marked by the paper gate	○ Paper gate (7) is in wrong position for this particular paper.	○ Readjust the position of the paper gate (7) in moving it back or forth). Use set screw (9).

18 Ordering Cutting Plates

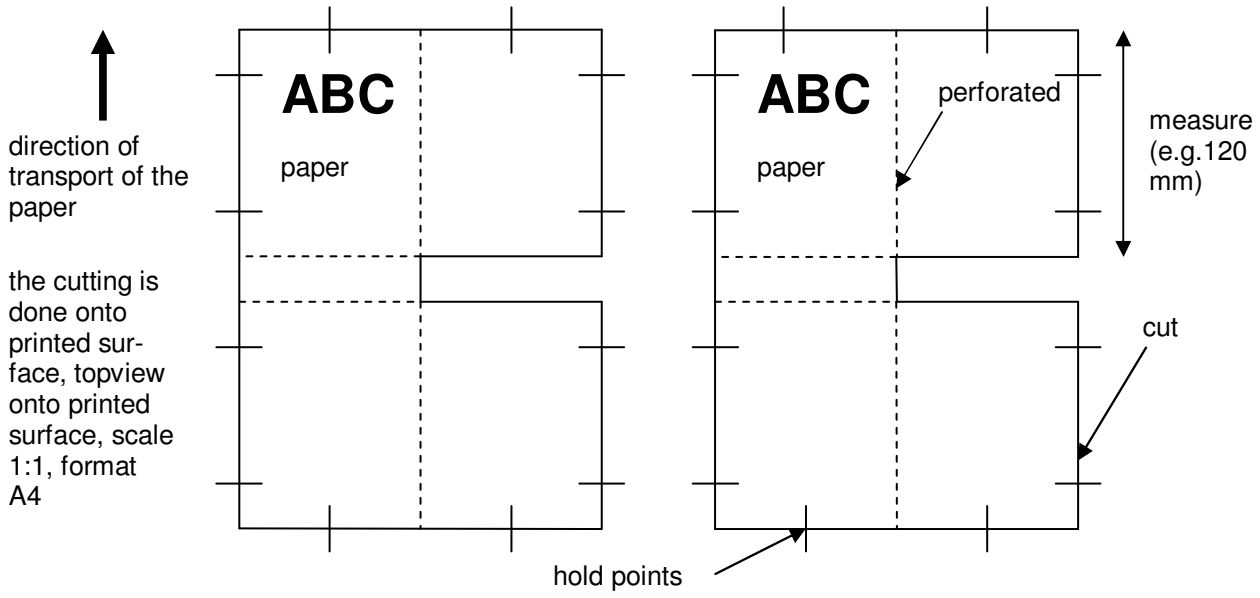
To order a cutting plate the following specifications are necessary:

- **The gap clearance** of 0.8 mm (distance between the cylinders)
- **The thickness of the paper**. The specification g/m^2 won't be enough, because it doesn't necessarily tell anything about the thickness. However this information is important for creasing, stamping and kiss cutting.
- **The direction of transport,** because the cutting plate has to be shortened in perimetric direction.
- **The position of the hold points** at partial cutting
- **Position, orientation and reference of the drawing** (e.g. topview or bottom view, referenced to paper or cutting plate)
- **The perimeter is 508 mm, the maximum lenghth of the cutting plate is 504 mm** (because of the stop pins, which shouldn't be covered by the plate)
- **The maximum breadth is 360 mm.**

The drawing must be true to scale. Following scalable file-types may be used:
PDF, AI, EPS, DWG, DXF. More precisely informations are available from the specific manufacturer of the cutting plates.



A stamp, e.g. for folded boxes, is beeing done from the backside. This means, that in this case the material lies face down.



DECLARATION OF CONFORMITY
KONFORMITÄTSERKLÄRUNG
DÉCLARATION DE CONFORMITÉ

We/ Wir/ Nous: **Ernst Nagel GmbH**
Breitwiesenstr. 21
70565 Stuttgart
Germany

declare under our sole responsibility that the product/
erklären in alleiniger Verantwortung, dass das Produkt/
déclarons sous notre seule responsabilité que le produit

Nagel DFC

to which this declaration relates is in conformity with the essential requirements of EEC directives/
auf das sich diese Erklärung bezieht, in Übereinstimmung ist mit den Bestimmungen der EU Richtlinien/
auquel se réfère cette déclaration est en conformité avec les exigences essentielles des directives de la communauté européenne

89/336/EEC	and amendments/ und Änderungen/ et amendements
89/392/EEC	and amendments/ und Änderungen/ et amendements
73/23/EEC	and amendments/ und Änderungen/ et amendements

by applying the following harmonized standards/
unter Anwendung der folgenden harmonisierten Normen/
en appliquant les normes harmonisées suivantes

EN 60204-1	06.93
prEN 1010	10.99
EN 60950	08.92, + A1 + A2 + A3 + A4 + A11
EN 55022	09.98 Klasse B/ class B/ classe B
EN 55024	09.98
EN 61000-3-2	04.95 + A1 + A2 + A14
EN 61000-3-3	01.95

Year of affixing the CE marking/
Jahr der Anbringung der CE-Kennzeichnung/
L' an de l' application de la marque CE:

2008

Stuttgart, October/ 02/ 2008

Place and Date/
Ort und Datum/
Lieu et date

Managing Director/
Geschäftsführer/
Gérant

19 Glossary / Abbreviations

BG = assembly (Baugruppe)
ELR = Electron. Load-Relais
GND = Ground
H x W x D = Height x Width x Depth
IR = Infra red
RH = Relative humidity

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Rev. 1.0
Rev. 1.3 Service Screens, Trouble shooting DFC, Instructions Feeder
Rev. 1.4 Ordering Information

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